

# Utilize the Power of Vibrations to Promote Wellness

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## STORY AT-A-GLANCE

- › Whole-body vibration therapy is the therapeutic utilization of vibration to induce healing on the human body. Research suggests that the combination of muscle and sensory stimulation is the key behind its benefits
- › Published research shows that whole-body vibration therapy can be used on a multitude of conditions, such as fibromyalgia, dementia and knee osteoarthritis. The preferred tool to administer this therapy is vibration plates
- › Vibration plates come with various features and price points. Do your due diligence, selecting only the features you need to help you make a well-informed purchase
- › Despite research showcasing its benefits, whole-body vibration therapy must not be treated as a substitute for real exercise. It's better to view it as an adjunct to your usual exercise routine

Your body is exposed to vibrations nearly every day. From driving a car to operating motorized tools or just moving around your home, your body has an innate ability to absorb and balance itself in response to vibrations.

What's interesting is that these very vibrations, when administered in controlled doses, can induce therapeutic benefits, too. If you're looking to take your fitness to the next level, you may want to consider harnessing this modality using a vibration platform, such as the Power Plate.

# The Science Behind Whole-Body Vibration Therapy

According to a study<sup>1</sup> published in F1000Research, the human body detects vibrations through the mechanoreceptors found under the skin and near the bones.<sup>2</sup> These vibrations are measured in Hertz (Hz), which is a complete cycle a vibrating object makes when it moves from one position to the other and back again.<sup>3</sup>

The human body is sensitive to vibrations of 1 to 100 Hz.<sup>4</sup> Strong vibrations are harmful to human health, and frequencies higher than this range can irritate and injure the musculoskeletal system. On the other hand, research has discovered that milder vibrations can be used for therapeutic purposes.<sup>5</sup>

Researchers theorize that there is a twofold mode of action as to how these controlled, milder vibrations can benefit human health. The first is muscle activation, and the second is the sensory (skin) component, which can stimulate brain activity. To harness these beneficial vibrations for better health, the popular method is a vibration platform, also known as a vibration plate.<sup>6</sup>

As the name implies, a vibration plate is a device that you can sit, stand or do exercises on. It creates vibrations higher than what we're normally used to, which recruits our stabilizing muscles to contract at a higher intensity. With the device turned on, you're actually exerting more effort and energy, leading to beneficial outcomes.<sup>7</sup> As for the frequency used, protocols range from 12 Hz to 90 Hz.<sup>8</sup>

What kind of vibrations are actually created by the vibration plates? The answer depends on the type of vibration plate used. I recommend Power Plate, as it utilizes a unique “tri-planar” movement that improves upon commonly used vibrating plate technology. But before diving into its details, it would be wise familiarize yourself with the other kinds of vibration plates sold on the market today, namely:<sup>9</sup>

- **Pivotal vibration** — Also known as oscillating vibration, a pivotal vibration works like a seesaw, tilting up with a central pivot point. The tilting goes up and down rapidly, which is almost imperceptible. The disadvantage is that the user cannot move on

the surface while using the vibration plate, preventing dynamic exercise from being performed on it.

- **Linear vibration** – This type of vibration plate moves back and forth along a straight line. The main difference between this and pivotal vibration is the direction. Linear has a back-and-forth motion, while pivotal has a tilting motion. The advantage with this technology is the products are usually cheaper, making it appealing for first timers.

On the other hand, Power Plate's pioneering tri-planar vibration technology, called PrecisionWave™, is an improvement upon linear vibration plates, and works by vibrating in three different directions – up and down, side to side and front to back. It's considered to be the most precise vibration methodology so far and is the most advanced vibration technology on the market. According to their website:<sup>10</sup>

*"The vibrations of Power Plate's machines are meticulously calibrated to assign each direction a specific frequency – which is a fancy way to say that Power Plate's engineers have optimized each vibration to give you the best possible results."*

## **What Does Published Research Say About Whole-Body Vibration Therapy?**

The technology of vibration plates vibration began in the 19th century, but it was only during the 1990s that they surged in popularity when they were used to rehabilitate cosmonauts returning from outer space.<sup>11</sup> Since then, researchers have delved into its therapeutic benefits, finding it to be effective in areas such as:

- **Knee osteoarthritis** – According to a 2013 study<sup>12</sup> published in Annals of Rehabilitation Medicine, vibration plates may have a positive effect on chronic knee osteoarthritis. In particular, researchers noted that it "reduced pain intensity and increased strength of the right quadriceps and dynamic balance performance."

- **Cognitive function** — In a study<sup>13</sup> published in the Journal of Exercise Rehabilitation, researchers sought to identify the effects of whole-body vibration therapy to elderly women diagnosed with mild dementia.

For eight weeks, 65 participants with an average age of 79 years old underwent whole-body vibration therapy five times a week. Results noted that they had elevated brainwave activity, and that using vibration plates can be a viable method to help prevent functional decline in the brain.

In another study,<sup>14</sup> whole-body vibration therapy was conducted on 16 patients diagnosed with mild cognitive impairment for 24 weeks. Using SPECT (single-photon emission computed tomography) imaging, researchers noted that the participants had increased regional cerebral blood flow, which may result in improved cognitive function.

- **Fibromyalgia** — Research suggests that utilizing whole-body vibration therapy may help patients diagnosed with this disease. In one study,<sup>15</sup> researchers entered 60 fibromyalgia patients in a 12-week whole-body vibration therapy program. Using various tests, the authors observed better motor function and gait speed in the study population.
- **Spinal injury** — In a pilot study<sup>16</sup> published in 2009, researchers selected 17 participants with chronic spinal cord injury and administered whole-body vibration therapy three times a week for four weeks. By the end of the study, notable improvements were observed. According to the study:

*"The WBV [whole-body vibration] intervention was also associated with statistically significant increases in cadence, and both the stronger and weaker legs exhibited increased step length and improved consistency of intralimb coordination. Changes in cadence and step length of the stronger leg were strongly correlated with improvements in walking speed."*

- **Muscle strength** — Using a vibration plate may help you boost your fitness levels, as noted in a 2007 study.<sup>17</sup> Researchers recruited 16 healthy adults and asked them to

perform various static and dynamic unloaded squats while their legs were monitored. Researchers concluded that using vibration plates significantly increased the neuromuscular activation of the leg muscles.

In another study,<sup>18</sup> researchers selected 97 participants aged between 60 and 80 years old, engaging them in whole-body vibration therapy. By the end of the experiment, the study population experienced an increase in isometric muscle strength, explosive muscle strength and overall muscle mass in their upper legs, suggesting that it may help prevent sarcopenia.

## Is Whole-Body Vibration Therapy for You?

Based on published research, most people may benefit from vibration training. However, there are some exceptions. Those who recently had an operation, suffered a recent head injury or acute hernia, are epileptic and pregnant aren't advised to use a vibration plate. Those who have balance issues, postural problems and bodies with limited range of motion also aren't advised to use this device. To be sure, consult with a doctor or physical therapist first.<sup>19</sup>

Once your health care provider has given you the green light to use a vibration plate, how do you choose one that suits your needs? Here's a helpful guide you can follow by Very Well Fit:<sup>20</sup>

**Vibration type** – It's important to familiarize yourself with the different vibration types before choosing one of your own. Remember, tri-planar plates vibrate up and down, side to side and front to back, and are often seen in gyms and fitness centers. Meanwhile, oscillation plates move like a pendulum, from one side to another. This simulates walking and is seen more in therapy and general health rather than athletic uses.

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**Frequency and amplitude** – Choose the output congruent to the fitness goals you're trying to achieve. Again, frequency is the number of vibrations that cycle in one second, and amplitude is how far the plate moves up and down during each vibration.

The higher the frequency and amplitude, the more intense the vibration plate will oscillate.

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**Speed** – Look for a vibration plate with adjustable speed levels, giving you flexibility on the exercises you want to do on a particular day. For example, you may use higher speeds while you're standing or doing lower-body exercises, while lower speeds are used when sitting on the device or doing upper-body exercises.

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**Weight capacity** – Most vibration plates can support at least 230 pounds, but be sure to carefully read the product label. Ideally, look for a vibration plate that can support 300 pounds, since you may be holding additional weights aside from your bodyweight. Plates with a higher capacity tend to be sturdier, too.

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**Safety features** – Inspect the vibration plate before purchasing. Confirm that it is sturdy and the platform won't cause you to slip and slide while you use it. Check for other inclusions in the packaging, such as suction cups, rubber feet or additional mats. For guidance, a good vibration plate has a nonslip rubber or carpeted surface.

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**Additional features and accessories** – Choose only the features that you need, which can help you save money. Some vibration plates come loaded with features such as speakers and pre-programmed workouts. Other ones have remote control, removable seats and come with exercise bands.

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**Price** – Prices of vibration plates can vary widely, ranging from \$100 to \$3,000 for a top-of-the-line product. Cheaper ones may not be as sturdy or durable as the more expensive models, but you may not need all the extra features anyway. Carefully research the product that fits all your requirements so you don't overspend.

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## **Eight Whole-Body Vibration Exercises to Try**

You've purchased a vibration plate, now what? The next step is incorporating it into your existing exercise routine. Vibration plates can be used to slightly bump up the difficulty of exercises you may have been accustomed to for a while.

Before you exercise on the vibration plate, Very Well Fit recommends you turn it on for 30 to 45 seconds to allow your body to get used to the vibrations.<sup>21</sup> Once you get used to it, try these vibration plate exercises from ISSA (International Sports Sciences Association):<sup>22,23</sup>

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### **Push-ups**

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1. Place your hands on the vibration plate, keeping your wrists slightly outside the width of the body, but aligned with the elbows and shoulders.
2. Engage your core and keep your hips down.
3. Slowly flex your elbows, lowering your body toward the vibration plate.
4. Push back up to the starting position.

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### **Step-ups**

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1. Face the vibration plate, then place your right foot on the platform.
2. Without using momentum or pushing off using the left foot, press through the heel of your right foot to step up onto the platform.
3. Slowly reverse your movement and return to the starting position.
4. Complete the rest of your set on the leg you started with. You can also alternate between legs for the set.

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### **Plank**

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1. Assume the plank position. But instead of your forearms on the ground, place your forearms on the vibration plate.
2. Keep your shoulders aligned with your elbows, with the head and neck neutral. Imagine your body in a straight line, with a slight angle from the head to your feet due to the vibration plate's raised height.

3. Engage your core muscles and keep the hips down. Once you're in position, turn on the vibration plate.
  4. Hold the plank for your usual set amount of time, keeping your body engaged to maintain good form.
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### **Squat**

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1. Stand with both feet on the vibration plate. Make sure that they're slightly wider than hip-width with the toes slightly pointed outward.
  2. Push the hips back and slowly lower your torso to the squat position.
  3. At the bottom of the squat, push through your heels and return to the starting position.
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### **Reverse lunge**

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1. Stand with both feet on the vibration plate.
  2. With the right foot on the vibration plate, step down with your left foot.
  3. Keep the right hip, knee and ankle aligned, then press through the right heel, reversing the movement to bring yourself up back to the starting position.
  4. Complete the rest of the set with one leg. You can also complete the set alternating with the other leg.
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### **Calf raises**

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1. Stand with both feet on the vibration plate.
2. As the device begins to vibrate, slowly press through the balls of your feet to raise the heels upward and off the platform, as if you're tiptoeing.



3. Slowly lower your heels back to the starting position, and repeat until you complete the desired number of reps.

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### Triceps dip

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1. Place your arms on the vibration plate and execute the exercise normally as you would.
2. Pay attention to your form, lowering your torso down until your elbows are at 90 degrees.
3. Lift yourself back up into the starting position.

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### Leg crunch

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1. Sit on the vibration plate.
2. Lean back slightly and lift your legs until the calves are parallel to the ground.
3. You can either hold this position or bring your knees closer to your chest, same as a reverse crunch.

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## Don't Depend on Whole-Body Vibration Therapy Alone

While the benefits of vibration plates seem enticing, don't use it as a substitute for regular exercise. Indeed, the Mayo Clinic still recommends a combination of a nutritious diet and increased physical activity to stay healthy and adding whole-body vibration therapy as an adjunct.<sup>24</sup>

Moderate-intensity exercise can go hand in hand with a vibration plate. In [my interview with Dr. James O'Keefe](#), a cardiologist at St. Luke's Hospital in Kansas City, activities that fall under this category include going for a casual bike ride, yoga, walking, gardening and non-intense swimming. In his research, he noted that people who exercise

moderately tend to have a good reduction in long-term mortality compared to those who vigorously exercise in high volumes.

Once you've got your exercise routine down, add a vibration plate into the mix (remember to try the exercises above). According to Hypervibe, vibration plates aren't meant to be used for long sessions. Depending on your goals, you only need to use the device 15 to 30 minutes a day, a few days a week. The guidelines below can help you plan out your use of the device:<sup>25</sup>

- **For general wellness**, such as helping with weight loss, use the device for 30 minutes a day, four days a week.
- **For strengthening muscles and energy levels**, use the device 15 to 20 minutes a day, three days a week.
- **For strengthening bone density**, use the device 20 minutes a day, four days a week.

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